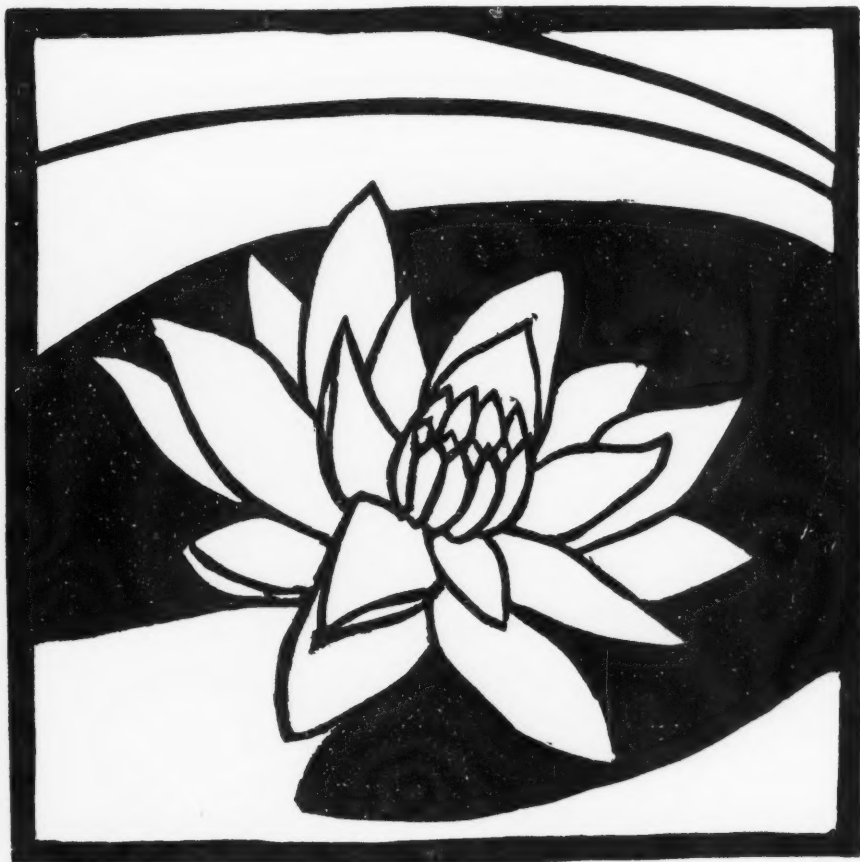


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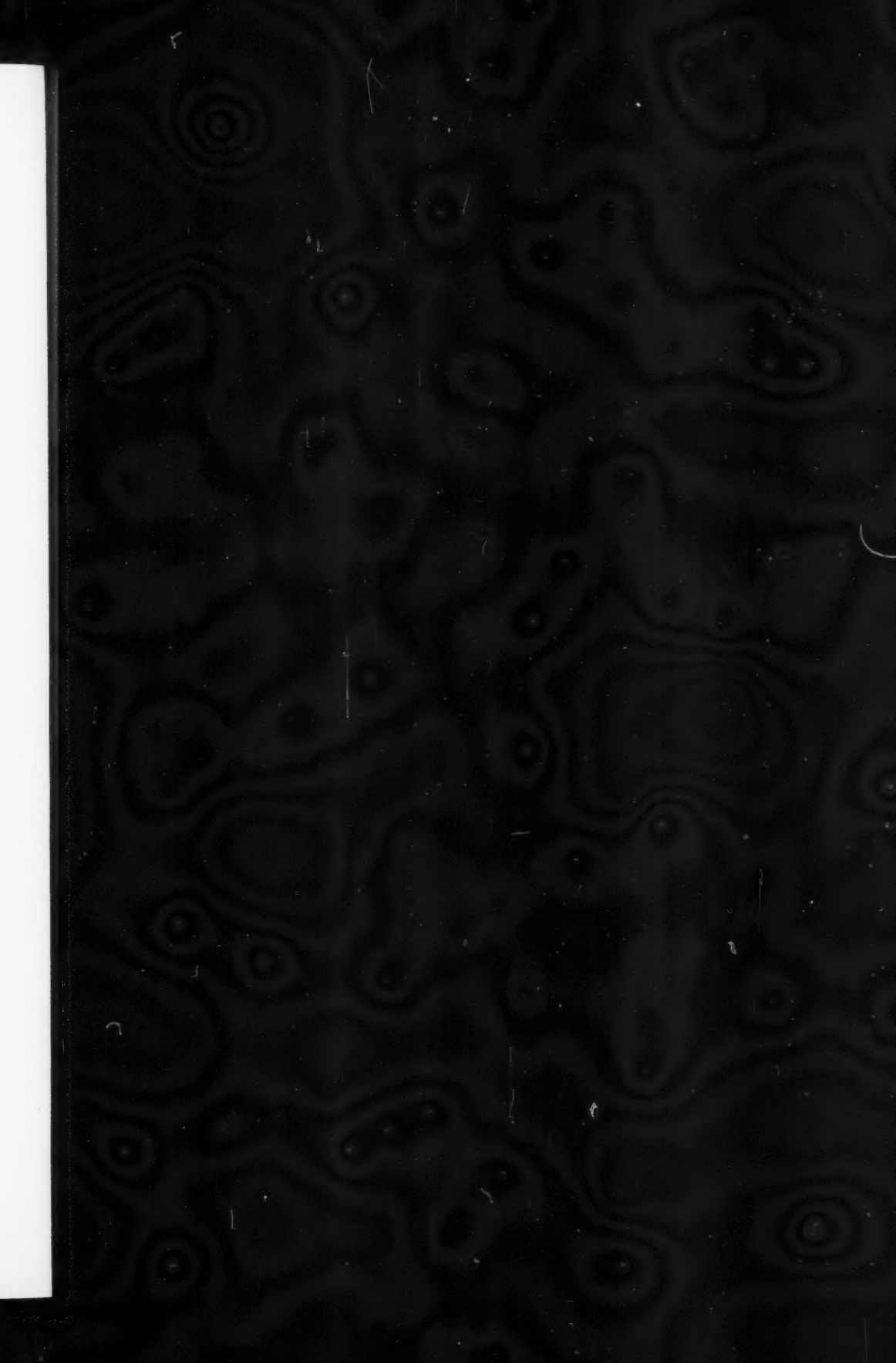
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Robert L. Taylor

[See page 236]

Narcissus, Ace of Diamonds

Rosemary And The Lavenders

HELEN M. FOX

Rosemary and the Lavenders are among the most attractive plants in the herb garden, because of their delicious scent given off by the leaves and flowers and also because of their evergreen foliage and neat habit of growth. They have always been favorites with gardeners, perfumers, healers and herbalists and the Rosemary with cooks as well. Perhaps even more than most herbs they have figured in folkways down through the years and at the present time Rosemary and *Lavandula officinalis* are listed in both American and British Pharmacopoeias and are used in both medicines and perfumes. *Lavandula latifolia* furnishes oil for paints and varnishes. In one year before the second World War, over three hundred and twenty five thousand pounds of Lavender oil were imported from Europe and two hundred and eighty-three thousand pounds of Rosemary oil.

In southern New York only the dwarf forms of *Lavandula officinalis* are hardy though the tall forms winter through along the seacoast and in the Hudson valley. Rosemary and the less hardy species and varieties of Lavender are so essential, however, to the picture of an herb garden that in order to have them, they are often grown in pots, wintered indoors in a cool yet sunny place and planted out in the garden for the summer.

Rosemary and most of the Lavenders come readily from seed and can be increased from cuttings, almost any time during the growing season. Each gardener seems to have his favorite time and special way of rooting Lavender. A sure way is to leave a bit of heel on the cutting and root it in moist sand. Both

plants seem to thrive best in light, well drained soil, where there is a little lime present. With me the Lavenders require protection from the north and are mulched lightly either with salt hay or pine boughs. This is done principally to prevent burning from sun during false springs when the weather turns unseasonably warm.

Rosemary and the Lavenders are native to the Atlantic Islands and can be found all along the Mediterranean littoral. A few of the Lavenders come from Persia and India. Voyagers to Spain since Roman days have said the fragrance of these plants could be smelled far out at sea, a statement which can be verified from personal experience. There, too, trunks of old, large plants are used for firewood and give forth a fragrance which smells like incense. This is not surprising since Dr. Paul Leon Guisepppe, collector and grower of alpine plants, wrote that when he was high up in the Spanish Sierras incense was being made by burning *Cistus*, Rosemary and Lavender in pits.

Upon venturing into the realm of naming plants, the way leads into a complicated and controversial territory and it is best to follow one authority as much as possible to avoid confusion. In this paper, the classification of the former Miss D. A. Chaytor, who made a taxonomic study of Lavenders at Kew, which was published in the Journal of the Linnean Society, October 1937, is taken as the principal authority. Some advice from Dr. L. H. Bailey's books and my own notes on plants in the garden, are used principally on horticultural varieties. In an account of this kind it is not necessary to go into

the naming of all species and crosses, only those plants are described that are commonly grown in gardens or used commercially and a few unusual ones, to show the great variation existing in the genus.

There are about twenty eight known Lavendar species. The characteristics common to all species are as follows: *Lavandula* is an aromatic shrub or subshrub with leaves either entire, pinnately-toothed or -dissected. The flowers grow in whorls composed of two to ten blossoms; these whorls are generally crowded into cylindrical, terminal spikes and the spikes are borne on long stalks either unbranched or branched from the base. The colors of the flowers most frequently are blue, violet or lilac and rarely pink or white. The calyx is tubular, five toothed and the five corolla lobes are nearly equal or with the upper lip two-cleft and the lower three-cleft. There are four stamens directed obliquely and generally not protruding outside the corolla. The style is shortly two-cleft. The hairiness is simple, branched or stellate. The size, shape and color of the thinly textured bracts which subtend each half whorl furnish means of identification for several species. The tiny bracts under the flowers are present only in the species classified under the Section SPICA. To further complicate identification there has been a great deal of hybridization among the Lavenders in both the wild and cultivated state, sometimes between plants of different Sections.

Miss Chaytor gives five Sections, namely: STOECHAS, SPICA, PTEROSTOECHAS, CHAETOSTACHYS and SUBNUDA. The most important Section horticulturally is SPICA. Under this Section come the species: *officinalis*, *latifolia* and *lanata*.

Lavandula officinalis is now the ac-

cepted name of a plant heretofore called *L. spica* or *L. vera*. There are several varieties of *officinalis* differing in height, length and width of leaves, color and quality of the essential oil they yield. *Latifolia* and *officinalis* have been cultivated for centuries and have been hybridized and from these plants several garden varieties have been selected. Characteristic features of *officinalis* are its one to three feet high growth and woolly stems. The leaves are entire with revolute margins, a prominent central vein and linear lanceolate shape, up to two inches long. Much smaller leaves grow out of the axil of the larger ones. The young leaves are grayer and the older ones greener. The flowers are violet, more rarely pink or white, one quarter to a half inch long and grow in whorls of six to ten with ovate pointed bracts subtending the whorls.

Under *officinalis* is a low variety called *compacta* which according to Dr. Bailey, is the same as var. *nana compacta*. They are allied to var. *angustifolia* and var. *pyrenaica* which is small and grows in Spain and the Pyrenees. It has large bracts, often purplish, especially at the top of the young plants. The dwarf forms are hardier than the tall and are the only Lavenders which live through the winter for me so I have collected as many variations as I could find. They grow from eight to twelve inches high and begin to bloom in July and keep on for some time. Among them is a form called Munstead Dwarf, which has hairy lavender gray foliage with bluish flowers and furry flower buds. In its young stage it looks like a tiny gray pine, it is so regular and stiff but with increasing maturity the weight of the open flowers bends the stems a little, the whole plant loses its stiffness and resembles a tiny Laven-

der gray fountain. Other dwarfs are *nana* Backhouse, with slightly larger and deep blue flowers; Folgate Blue, with mauve flowers, paler than Munstead Dwarf but otherwise like it; Hidcote Purple, with rich purple flowers; and Twickle Purple with graceful flower spikes up to four inches long and because of this are of a length good for cutting and putting in vases. Also there is a form called Middachen with glaucous foliage and dark flowers. One supposed to be *alba* turned out to have pale pink flowers with an undertone of pale lavender and is enchanting. This is undoubtedly var. *rosea*. The whole plant is more blond than the others; the green of unopened buds is very pale, the calyx instead of being tinged purple or dark green, is pale green too. A note in the English *Gardeners' Chronicle* recommends a form of var. *alba* only three inches high. When the plants with flowers in different hues from deep purple to pale pink are interplanted in a border along the top of a low stone wall or as an edging to perennials with a green lawn in front of them the effect is a symphony in pastel tints.

Of the tall forms there is a white flowered one offered in an English catalogue, also one called Silver Gray said to be similar to the plant called Old English, a selection of Eleanor Sinclair Rohde's and claimed to be the most floriferous of all.

A variety called *delphinensis* is said to be like *angustifolia* but differs from it in being larger and more robust with leaves lanceolate to oblong and margins scarcely revolute, and with longer more interrupted and more robust spikes. This form is found in Switzerland and France and is collected for extracting the oil.

A plant called *Lavandula serrata* appears to be a variety of *officinalis* and

smells like it. The distinctive odor of a species is often a sure way of knowing the plant is different. It is distinguished from the type by the fact that the lower leaves on the stems are dentate from the tip two thirds of the way down.

Under the Section SPICA, today considered to be a distinct species, is *Lavandula latifolia* the now accepted name and includes *vulgaris* and *fragens*. *Latifolia* is the type of spike or spike lavender used in industry and grown commercially. It has been hybridized with *officinalis*. The leaves in this form are wider than those of *officinalis*. They are either shaped like a narrow ellipse or like a spatula, much attenuated at the base and with glands especially noticeable on the under surface. They measure two and a half inches in length and one half inch across. The flower spike is often interrupted, compact and rather slender; the bracts linear lanceolate, acute and equal to the calyx or slightly longer; the marginal teeth of the calyx are obtuse and rounded, the posterior appendage elliptic; and the hairiness is short gray and suede-like and occasionally tinged with purple. Spike oil which smells like Rosemary and Lavendar mixed comes from this plant.

Lavender oil is distilled from flowering tops and sometimes upper leaves of *officinalis* and some of its varieties and from *latifolia* and from *delphinensis*. English Lavender oil is obtained from plants cultivated in England and claimed to be better than French oil which is extracted from wild plants. The English use the narrow leaved form which before the change of botanical names was called *vera* but now is *officinalis*. The best quality of French oil is obtained from plants found in altitudes from two thousand to almost four thousand feet. Lavender oil is used for

*Gottscho-Schleisner**Lavandula latifolia*

soaps, perfume and medicine. Today it is also used to overcome disagreeable odors in ointments and other compounds. It has mildly stimulating prop-

erties, hence spirits of Lavender is a restorative for faintness and is said to provoke appetite, raise the spirits and dispel flatulence.



Gottscho-Schleisner

Lavandula serrata

The only time I saw *Lavandula lanata* was as a herbarium specimen from North Africa, but, it is native also to Spain. It is unusual because the

leaves clustered near the base of the stem are exceedingly woolly. They are linear lanceolate and narrowly spatulate. According to Miss Chaytor the

flower spike is interrupted, lax and sometimes very long, reaching five inches. The bracts are linear to lanceolate; the calyx has four teeth alternating with four rounded lobes, the posterior lobe is enlarged into an upright elliptic and slightly hooded appendage. The corolla is small and the tube tiny but longer than the calyx.

Under the Section *STOECHAS* are the species: *dentata*, *stoechas*, *viridis* and *pedunculata*. *Dentata* is distinct from the other three which differ in minor points. The most obvious differences lie in the length of the stalk that carries the flowering spike, which is short in *stoechas*, medium in *viridis* and long in *pedunculata*. Other differences are in the hairiness and color of the flowers. The Section is unique because of the tuft colored bracts which grows out of the tip of the flowering spike.

For years I have grown *Lavandula dentata* as a pot plant and found it one of a most persistent bearer of flowers, for it blooms from mid-summer until the following spring. It is native to the Mediterranean and in Sicily is used as a hedge as it stands clipping well. The plant is a vigorous shrub, branches freely and grows three feet or more high. It is rough to the touch, and the narrow light green leaves are so evenly dentate they look as if they had been cut with a pinking shears almost to the center. The margins are revolute; flowers are borne at the tip of a long naked stalk in short interrupted lax spikes, are subtended by broad green bracts outlined with lavender and pointed at their tips; the bracts growing from the apex of the inflorescence are grouped in several whorls and overlap each other. They are lavender with a green line down the center; flowers are pale lavender and the corolla tube is slightly longer than the calyx.

It is said the Romans called the Stoechades Islands off the coast of France after *Lavandula stoechas* where it is abundant. Hegi said in antiquity it was used more than *latifolia* or *officinalis* and in the Middle Ages was one of the ingredients of the Vinegar of the Four Thieves, famous as an antidote against the plague. After being dried, it was carried over the Alps, was called sticadore and until the middle of the eighteenth century was used medicinally. The gray green shrub covered with fine white hairiness is native to the southern coast of France, also Spain and Portugal. With me it has grown to eighteen inches high, but elsewhere to three feet. The leaves arch upward, are slender, downy, and pointed at the tip. The stems are leafy, much branched and tinted reddish plum. The dark purple flowers are almost trumpet shaped and grow in close heads and form an inflorescence one and one eighth inches long and one eighth inch across. The calyx is green and furry and so is the bract subtending it. Miss Chaytor says the calyx is occasionally white, pink or copper pink. Out of the top of the flowering spike grows a tuft of narrow purple bracts with wavy margins resembling a bunch of bright feathers. A fine form of *stoechas* with immense violet beards, that is the plumes, has been reported as plentiful in Crete where it covers several acres exclusively. The plant smells a little of turpentine and yet flowery too.

When I grew *Lavandula pedunculata*, it appeared similar to *stoechas* except that the leaves were lanceolate with crinkled surfaces, the peduncles longer, and the flowers smaller. The shrub grows three feet and the hairiness on leaves is densely short and gray—on peduncles and young stems short



Gottschö-Schleisner

Lavandula dentata

and densely white. The flowers are dark purple yet sometimes white, the tube only slightly longer than the calyx.

In *Lavandula viridis*, the hairiness is

dense and consists of short greenish hairs. The corolla is white with the tube slightly longer than the calyx and the bracts subtending the flowers as

also the plume are white or greenish white. It sounds quite charming.

Under the Section *PTEROSTOECHAS* are three species which I have grown, all with much divided feather leaves entirely different from the other groups of Lavenders and desirable because they bring a greater variety of leaf forms and shades of green as also different smells to the collection. They are not hardy in the northeast but are admirable plants for southwestern and southern gardens. The three species I have grown are *multifida*, *canariensis* and *pinnata*.

The whole Section is characterized by having pinnate or bipinnate leaves, but they may be dentate to laciniate-dentate or entire as in *atriplicifolia*. The bracts each support a single flower. The calyx is sessile, five-lobed, bilabiate, the median posterior tooth usually broader than the others and the corolla tube considerably longer than the calyx, sometimes more than twice. The corolla is usually two-lipped, the posterior lobe is erect and either much larger than the spreading anterior lobes or they may be of almost uniform size as in *antriplicifolia* and *rotundifolia*. The plants occur in the Mediterranean region and in northern tropical Africa from Somaliland to Nigeria.

Lavandula multifida now includes *pinnatifida*. The hairs on the stems are long and weak and the bracts and calyx are woolly and gray. It is an odd plant, more curious than attractive. It is said to be biennial in its native land, grows about two feet high and is hairy with a green fuzz on the leaves, which arch and in my plants are bipinnately divided. The flowers form a spike at the termination of a long, naked stem and open a few at a time. They grow in four rows, one dovetail-

ing into the next. The spike twists spirally. The blossoms are lavender, tubular, and five-parted and in each division is a tiny purple line as if to indicate the way to the pistil to visiting insects. The calyx is green, marked brown and furry. There is a colored bract under each whorl. The whole plant, at least in my garden, smelled a little reminiscently of gasoline.

Lavandula canariensis, in my plants, has bipinnate yellow green leaves. The hairs are branched, denser on the leaves than on the stems. A synonym of this plant is *abrotanoides*. The leaves smell strong and sharply. The flowering spike is pointed and at the end of a six inch long stalk. About one inch under the spike is a pair of opposite flowers. The bracts subtending the flowers are green covered with brown, marked with lines and hairy, widest at the base, then narrow to a point. The flowers flare, are rose lavender and about as long as the calyx which is hairy.

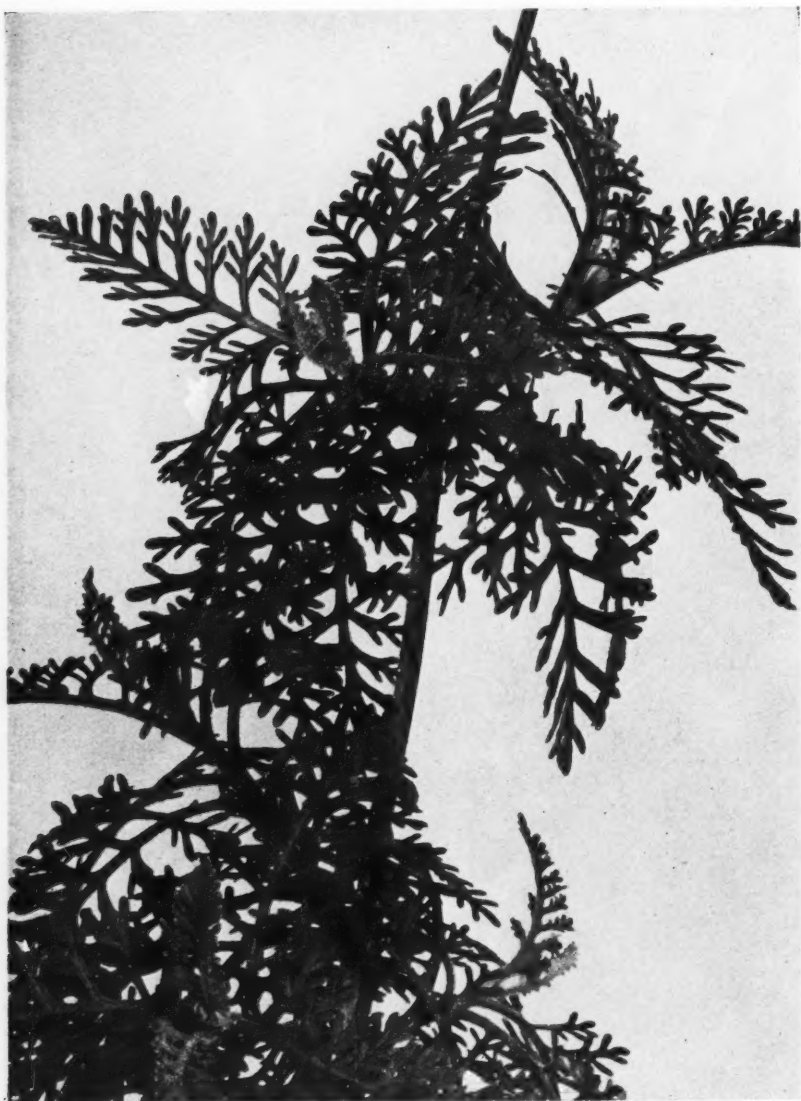
Lavandula pinnata from the Atlantic Islands has fairly long leaves three inches in length including the stalk which is an inch long and with the blade a little over one inch across. They feel like soft velvet or felt and are not feathery like the others, instead the leaf blade is deeply cut with divisions far apart and rounded at the tips. The corolla tube is very narrow and more than double the length of the calyx. It has no fragrance, at least none in my plants.

A last Lavender belongs to the Section *CHAETOSTACHYS* and comes from distant central and southern India and is called *Lavandula bipinnata*. The leaf divisions are bright green, slender and long. The largest leaves measure three by three inches, however, in their native habitat they reach six inches in length

*Gottschlo-Schleisner**Lavandula multifida*

Each division is again divided. Because the leaves arch and the divisions are separated from each other the effect is relaxed rather than stiff. A character

of the plants is that the stems are contracted a little at the nodes. The flowers grow in a branching inflorescence which at times becomes umbellate. The flow-



Gousseno-Schleisner

Lavandula canariensis

ers are in whorls and each of the lower whorls has a stalk, under these is a bract which has three elongated pin thin tips. Under each flower the bracts

have a single spine shaped tip and this gives the inflorescence a look of being bristly but these tips are not stiff. The flowers are white, the tube tinted laven-

*Gotscho-Schleisner**Lavandula pinnata*

der and in my plants the same length as the calyx though they have been described as nearly double the length. The

plant is said to vary considerably according to growing conditions. It is very attractive.



Gottschö-Schleisner

Lavandula bipinnata

My own experience with Rosemary, *Rosmarinus officinalis*, is somewhat unique for it has not been hardy. It grows very well in pots where, how-

ever, they are not as long lived as in the ground. In Ireland I saw bushes with trunks eight inches across and stems rising to eight feet.

Rosemary means "dew of the sea." There is but one species but there are varieties that differ in habit of growth and tinting on the leaves. They come readily from seeds and are sometimes large enough to plant out six weeks after being sown. It is also easy to increase the plants from cuttings. The plant is native to the Mediterranean and is wild on the chalk hills of Southern France and especially abundant around Narbonne.

Rosemary has numerous somewhat arching branches, the main trunk is woody with shredded bark; upper stems are rounded and have a fine pubescence on them. The evergreen leaves are one and a half inches or more long and one eighth inch across, linear and pointed at the tip and have a strongly marked depressed vein down the center. They are closely set along the stems. On the upper surface they are glossy green with revolute margins. Since the leaves arch they show the gray undersurface. The flowers are pale lavender blue, one half inch long, grow in short axillary more or less hairy racemes and the stamens are exerted. They generally begin to bloom in February and continue into May. The whole plant is very fragrant, with its own special and characteristic smell, sometimes called "balsamic."

In the type, the branches arch and grow somewhat loosely and are a yellow-green than in some other varieties. One variation called Miss Jessup is more upright, comes true from seed and makes a fine hedge plant particularly becoming to roses.

A variety called *prostratus* is a low rock plant with branches level with the ground and the least hardy of them all.

Among other variations read about but not grown by me is one called var. *pyramidalis* which grows to three feet

and is said to have dark and pale lavender flowers. *Pyramidalis* is reported to lend itself to being shaped into standards to anyone so minded. A "golden Rosemary" is mentioned as a variegated plant of the seventeenth century, and sounds lovely. There is also mention of a plant with silver variegations. A white-flowered Rosemary is reported to have been found in Malta.

Rosemarinus officinalis "Beneden Blue" said to be var. *angustissimus*, was given an award of merit in 1933 by the Royal Horticultural Society. It was grown by C. Ingram who had collected it in Corsica. The leaves are said to be narrower than in the type, the numerous flowers are bright blue.

Rosemary has a long history and has been associated closely with folklore. Undoubtedly because of its evergreen foliage and strong scent it was used in decorations at weddings, funerals and for Christmas. In the Middle Ages in French hospitals it was customary to burn Rosemary with juniper berries to purify the air. One wonders how much germicidal effect this had, if any. Lavender was used in the same way.

The best oil is extracted from flowering tops. Commercially it is extracted from stems and leaves before the plant flowers, using generally young shoots and trimmings taken at the end of August or beginning of September, after the woody parts are separated.

The flowers are liked by bees and impart their flavor to honey gathered where it grows plentifully.

The colorless or pale yellow oil is imported to the United States from France, Spain, Tunis and Morocco in large quantities. It is used chiefly with other drugs as a carminative, as an ingredient in rubefacient liniments, in hair lotions, in perfumes, especially in soaps and *eau de cologne*.

The Coum-Vernum Group of Species of *Cyclamen*

WALTER C. BLASDALE

Many of the herbals and flower books of the later sixteenth and early seventeenth centuries include accounts of kinds of *Cyclamens* listed under a variety of descriptive phrases. A study of them makes it probable that the writers were familiar with the species which we now know under the specific names *europaeum*, *persicum*, *neapolitanum*, *hederaefolium* (called *repandum* until 1938) and the two with which we are here concerned. These two are so similar that their status as specific entities is now seriously questioned and I will first consider them as a group and enumerate those characters which are common to both.

Both form corms which rarely exceed two inches in diameter, are about twice as broad as long and equally rounded above and below. Their roots form a long, compact bunch rising from the center of the lower corm surface. The leaves and flowers all originate from a single, central axis of the corm and may attain a length of two inches if the corm is that distance below the ground surface but is proportionately shorter as that distance is less. Both petioles and peduncles originate from points very near the free ends of the axes, travel horizontally for a short distance and then bend upwards abruptly to become vertical, that is they are "geniculate." In their native habitats their leaves begin to appear in November and are distinguished by their thin, short petioles, horizontally-poised blades, sometimes shorter and sometimes longer than broad, a cordate base and entire or nearly entire margins.

The blossoms begin to appear at about the same time but develop much more slowly and rarely show above ground until mid-December. The flowers are shorter and broader than those of the other species. Their petals stand nearly erect and their edges are rolled inwards so that a horizontal projection of the corolla would give a figure composed of five U-shaped lines arranged symmetrically with respect to the center of the flower. This is one of the most distinctive features of the group. In nature their colors include shades of red but those of the cultivated forms include pure white. As in most of the other species there is a blotch of deep red at the base of the petals but in this group of species these blotches are interrupted by small, round or oval patches of white, one on both sides of the central line of each petal.

Relatively few of the flowers become fertilized. Those that do not, wither and fade away within about four weeks after opening; those that do, drop their corollas and attached stamens as a unit and immediately thereafter the ends of the peduncles begin to move in circles, thereby converting them into from four to six complete coils and rapidly bringing the capsules to the ground. The nearly spherical capsules ripen in May and June and then start to open from a point near the base of the still-attached style, forming a series of short teeth and exposing the large brown seeds which surround the globular placenta in a single closely packed layer.

Cyclamen coum Miller. The words *Cyclamen coum herbariorum* appeared

in a catalogue of plants growing in the Jardin des Plantes, which was compiled by D. Jonquet in 1665. These words are accompanied by others reading (as translated): "A spring-flowering *Cyclamen* with round, flat leaves reddish below, with purplish flowers, from Chios," which is an island in the Aegean Sea near the western shore of Asia Minor. Jonquet's name appeared later associated with plants in cultivation in England by Robert Morris in his *Plantarum historia oxoniensis* (1672), by Philip Miller in his *Garden Dictionary* (1786) and by Curtis in his *Botanical Magazine* (1786) but none of these authors cites characters which clearly distinguish *C. coum* from the other species of the group under discussion. Miller's account of it is fairly complete and he has been accepted as its author. The differences which distinguish it from the second species were first put into print by Robert Sweet in 1823 in his *British Flower Garden*. He states: "In *C. coum* the leaves are reniform, have large basal openings and are entirely green on their upper surfaces." Of these items the last is the only reliable one because the leaves of all the other species show a zone of grayish green patches not far from their edges, although these patches are sometimes small and inconspicuous. Other less reliable differences associated with the absence of the spots are: blades disposed to be broader than long and never pointed, basal lobes more widely separated, and flowers which tend to appear somewhat earlier in the season.

It is noteworthy that all of the early descriptions of both species are of cultivated specimens. Curtis (l. c.) states that *C. coum* grows wild in many parts of Italy and Germany, but I can find no record of collections which substantiate

that statement. Jonquet's assertion that *C. coum* came from the island of Chios has not been confirmed. This question was studied by Schwarz and reported on in his 1938 monograph of the genus. Although he had access to many European herbaria and found some specimens labeled *C. coum* none of them represented that species as defined by Sweet.

Cyclamen vernalum Sweet. Sweet's separation of *C. coum* from the group made it necessary to provide a new name for the residual species. He chose the name *vernum* and published it, along with an excellent description and drawing, in the paper already cited. This name and description appears to have been lost sight of for many years. This was due in part at least to the discovery about 1839 of a *Cyclamen* from the Transcaucasian Province then called Iberia, to which plant the name *C. ibericum* was given. It was then recognized that this plant differed but little from plants already in cultivation and the name *C. ibericum* was also used to designate Sweet's *C. vernalum* which usage still prevails among most horticulturists at the present date. It was not until 1938 that Schwarz in his monograph showed that Sweet's name had priority; it is being adopted by modern botanists.

NATURAL OCCURRENCES OF *Cyclamen vernalum*

Although no authentic specimens of *C. coum* have been found growing naturally, *C. vernalum* has a wide range of distribution. Its most northerly habitats have been found in the Dobruja of southeastern Rumania, adjacent to the western shore of the Black Sea, and extend into Bulgaria. It appears in Thrace of northern Greece and on low mountains near Istanbul. Crossing the

Bosphorus it appears along the entire length of Asia Minor bordering the Black Sea, in a small area of Iran, south of the Caspian Sea, in the Cilician Taurus mountains of Asia Minor, and along the eastern shore of the Mediterranean in Lebanon, Syria, and Palestine. The exact limits of these areas have not been defined and further explorations may show connecting links between some of them.

VARIETIES OF *Cyclamen vernum*

Cyclamen vernum var. *hiemale* (Hildebrand) Schwarz. Specimens of this form were collected by Siehe of Mersina on low mountains near Istanbul and studied by Hildebrand. He gave it the name *C. hiemale* in a paper published in Beihefte zum Botanische Centralblatt, 19 (1906), p. 373. Aside from flowering earlier than the normal form of *C. vernum* it was distinguished by its larger flowers with broadly ovate and more deeply colored petals. It was soon introduced into cultivation and was generally conceded to be more beautiful than the forms in general use. In 1938 Schwarz reported from his study of specimens from the same locality that it was characterized by its narrower leaves with entire margins except for diminutive bristle-like projections at the larger nerve endings but he did not consider it worthy of specific rank. He also found from a study of a large number of specimens collected in northern Asia Minor, that there was an almost continuous series of gradations between what he called variety *hiemale* of Istanbul and a variety with somewhat pointed leaves and conspicuous leaf patches from eastern Asia Minor and the Caucasus Mountains.

Cyclamen vernum var. *caucasicum* (Willdenow) Schwarz. The name *cau-*

casicum was revived by Schwarz to distinguish the other end member of the series described in the preceding paragraph. It had been used by Willdenow to designate specimens collected in the Caucasus which he considered new and published in the *Flora Orientalis* of Boissier in 1879. By way of summary: the group with which we have been concerned consists of the species *vernum*, of which there are two varieties, *hiemale* and *caucasicum*; the name *coum*, as defined by Sweet, is not at present considered a valid species but, because of the importance which it has attained in horticulture, it is probable that the name will continue to be used.

ADDITIONAL NAMES WHICH MUST BE CONSIDERED

Cyclamen alpinum Sprenger. This has also been classed as a variety of *C. vernum* but seems to me quite distinct from that species. It was described in *Gartenflora* for 1892, p. 526, by a collector named Sprenger for the firm of Damman and Co. He reported it to be: "The dwarfiest and perhaps the most beautiful of all known alpine violets with small, reniform, white-spotted leaves and very beautiful purple-red flowers; the most beautiful and abundant flowering of all Cyclamens. It grows near perpetual snow on the highest mountains of Asia Minor and flowers in the spring." Corms of it were sent to Hildebrand with the additional information that it was probably only a form of *C. coum* growing near perpetual snow in the Cilician Taurus, that it has both red and white flowers, and that plants collected by Whittall in 1892 were distributed commercially and thought to be a form of *C. cilicium*. The corms sent Hildebrand produced seed from which other plants were grown and enabled him to study the

species exhaustively. He concluded it was a valid species related to *C. vernalum* rather than either *C. coum* or *C. cilicium*. Its distinctive characters are its diminutive size and its floriferousness, broader petals, absence of the two white spots near the base of the petals and a red-tipped style. The wide variations in the size of the leaf blades of different specimens led Hildebrand to think there were two varieties of it.

Finally, I recently discovered a paper published in the United States which gives some further information about the plants collected by Whittall whose name has already been mentioned. It was published in *Garden and Forest*, 5 (1892), p. 465 under the name of Edward Whittall. It describes five *Cyclamens* collected in Asia Minor. I find it difficult to interpret all that he writes about them but some of the statements found in the following quotation add to our knowledge of *C. alpinum*. He says: "My prettiest finds, however, date from 1891, viz. two dwarf *Cyclamens*. The first is like *C. europaeum* flowers in the autumn throwing up whitish pink flowers almost before the pretty marbled leaves. The bulbs rarely exceed more than an inch and a half across and when taken out of the soil are glassy flesh color, quite distinct from any others of the genus found in these parts. The second dwarf I consider a gem for rockeries. The bulb, like that of the first, is small, even smaller, flesh colored and glassy. The leaves are prettily marbled and more delicate than in the first. They grow so thickly on the plant that in the numerous specimens I grew this year I had not one plant in which the foliage measured more than four inches in diameter. This was surmounted by a numerous set of very large flowers, as compared with the foliage, with an almost black eye. I

have seen *coum* and other dwarf varieties but I believe none come up to this miniature cyclamen either in size and floriferousness. Both these dwarfs were found on the western spurs of the Taurus above the town of Adalia (the recent Attakia) and Phonecia and as they were discovered peering out of the snow at an elevation of 3000 to 4000 feet they will probably prove hardy." My belief is that the first of the two is *C. cilicium*, which will be described later, and the second is *C. alpinum*. I have not been able to get any further information about Whittall and the plants which he grew in the United States.

Cyclamen alpinum was in cultivation in England for a number of years but apparently it has disappeared. A very few seeds which I was able to procure about eight years ago gave no seedlings.

Cyclamen atkinsii Moore. This name has been in use for many years to designate a supposed hybrid between *C. coum* and *C. vernalum* but I am convinced that the name should be ignored. *The Horticultural Magazine of London* for 1863, p. 150, contains a paper by Thomas Moore reporting on a hybrid obtained by a man named Atkins. Moore quotes from him at some length stating that after several failures he obtained: "A hybrid from seeds produced by a variety of *C. coum* impregnated with *C. persicum* and these I have every reason to believe I shall be able to perpetuate." Also: "that the hybrid is exactly intermediate between the two plants as to size and form and to some extent as to color." The accompanying illustration, which is obviously not made from a photograph, does not, according to my interpretation of it, substantiate that statement. Mr. Atkins makes no mention of precautions taken to prevent pollination of the maternal plant by its

own pollen or of that derived from other plants. Although he expresses the belief that he will be able to perpetuate his supposed hybrid I have not found any record of his having done so.

Much later the name *atkinsii* (spelled with two i's) began to be used for a supposed hybrid between *C. coum* and *C. ibericum* (*vernum*) but I have not been able to find any record of the time, place, or person concerned in the production of such a hybrid. Seed and plants are still sold under that name but I have found no difference between the plants grown from such seed and that sold as *C. ibericum*. The same experience was reported by Edward Cahen in *Gardening Illustrated*, 59 (1937) p. 148. There is a widespread belief that hybridization between these species takes place spontaneously and it is quite possible this is true but I know of no scientifically-controlled experiments designed to test that supposition. In view of the fact that we have no evidence that *C. coum*, as now defined, occurs in nature and that naturally occurring forms of *C. vernum* include characters intermediate between these species, it seems more plausible to assume that cultivation and selection have given rise to an end member of the series which has been called *C. coum*. Whatever theory we adopt as to its origin the name *atkinsii* should not be used for the supposed hybrid since it has already been used for a supposed *coum-persicum* hybrid.

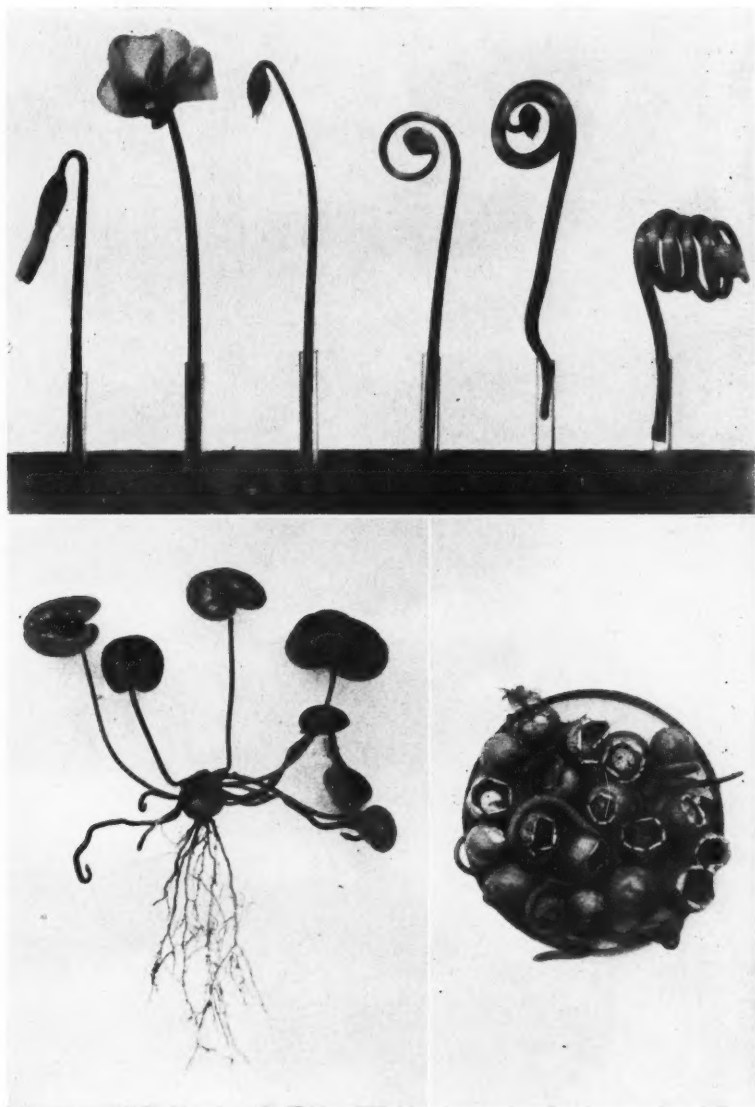
Cyclamen cilicium Boissier et Heldreich. This species was discovered about 1849 by Professor Heldreich near the famed Cilician Gate which connects the Cilician plain with other parts of Asia Minor. Later collections were made in the same region by Kotschy and in 1891 by Siehe. The last named described its occurrences, as re-

ported in *Gardeners' Chronicle*, 23 (1898), p. 81 as follows: "A species which grows in vegetable mold in shady parts of the lower hills, as well as in the upper forest region of the Cilician Taurus up to 2000 meters above sea level and in exposed situations."

The outstanding peculiarity of the species is that, although clearly related to the *coum-vernum* group, its flowers appear in October and November both in nature and in cultivation. The few plants I have grown suggest a dwarf form of *C. vernum* although the blades of seedlings have a quite different form. Those of mature plants are narrower and more nearly pointed, their upper surfaced marked by rather conspicuous silvery patches. The petals are short, broadly spreading rather than erect, broadly lanceolate, rose red, and the small basal patches lack the two white spots of *C. coum* and *C. vernum*. This species has been in cultivation in England for many years but never became as popular as its near relatives. Its smaller size makes it better adapted to an alpine house or conservatory than an open border. It is however, a charming plant, especially when grown in a pot.

CULTIVATION OF THE *Coum-Vernum* SPECIES

In discussing the cultivation of species of *Cyclamen* attention should first be given to the fact that they are all components of the flora of southern Europe, in which there is a seasonal sequence of hot and dry summers with cold and wet winters which has been characterized as the "Mediterranean Rhythm." The habitats of the species with which we are here concerned include mountain slopes and table lands in which the heat and drought of summer is less and the cold of winter is



Cyclamen vernalis: Various stages in development of the coiled stalk of the capsule, a plant fifteen months from seed, and ripe capsules, are illustrated.



Cyclamen vernum, three years old, showing the abundance of leaves and roots.

more severe than those which include habitats of such species as *graecum*, *africanum* and *cyprium*. Collectors of species of the *coum-vernum* group report their occurrence not far from the line of perpetual snow, where there is some shade, a humus rich soil, and a fairly generous precipitation. It is not surprising to find that these species are hardy in most parts of Britain and in most of the North Atlantic States of North America and in California, Ore-

gon, Washington and southern British Columbia. As compared with the widely cultivated Persian *Cyclamen* they are small of stature but their foliage is equally distinctive. Their flowers suggest those of a violet, partly because they are single-stalked and nodding and partly because their petals are more completely and symmetrically reversed than those of the violet. It might also be noted that one of the first species to be described (*C. curopacum*) has the added charm of fragrance and it and several others became known as "alpine violets." None of the *coum-vernum*

group has fragrance.

As an out-of-door plant they are especially suited for a border, a ground cover, or for small groups in an alpine garden or rockery. A few corms scattered over a properly drained, friable soil, where they can be left undisturbed for a series of years, should produce self-sown seedlings and in time a continuous carpet of vivid green for at least seven months of the year, during two of which it is sprinkled with flow-



Cyclamen vernum: Upper, a four-year old flowering plant in a four-inch pot.
Lower, plants growing a rockery.



Flowers and leaves of Cyclamen vernum

ers. The cultivation of such a plot is wisely restricted to the removal of weeds because it is difficult to stir up the soil with any kind of an implement without injuring the horizontal portion of the leaf and flower stalks. A fair amount of water must be provided during the growing season and is not harmful during dormancy. An annual application of leaf mold, added after the plants have become dormant, will go far toward eliminating the need of fertilizer.

The corms of plants capable of producing flowers are costly and I prefer to grow them from seed which can be had in both the United States and England. I sow the seed, at least a half inch below the surface, each seed separated from its neighbors by two inch spaces, in deep flats, where they remain until they have completed two seasons of growth. Even seed which is sown within a month of harvesting rarely appear above ground within less than six weeks and many of them not until several weeks later. The rate at

which the individual plants develop also varies greatly. The corms should be planted in the open during the second or even third period of dormancy sinking them at least an inch below the surface in order to insure sufficient support for the leaf and flower stalks, without which they are disposed to topple over.

The Tropics In Review

GEORGE B. FURNISS

A tropical thunderstorm is an exciting experience; spectacular yet fearsome. We were en route by automobile to the Royal Botanic Gardens at Peradeniya in Ceylon. The highway cuts through a dense jungle—a vast jungle which has defied the intrusion of man for ages. Penetration had been somewhat attained by sheer hardship. Animal and insect life made the depths dangerous to the adventurer and the swamps were potent with fever. Yet we sat in luxurious comfort as the lush vegetation passed us panoramically.

Modern road building reveals in cross section the intriguing beauties which are found in the virgin depths of rampant growth. To us it was a horticultural ecstasy . . . a tantalizing luxuriance even to one who gardens in a city lot, a glass shelter or window shelf. Thus in this vast tropical paradise fancy roams and the "Gardener's Itch" talks hold.

Without warning the sky became overcast and rain began to fall. Soon we were in the violence of a storm; the trees lunged and crackled in fierce resistance. Pouring rain brought intense darkness. Lightning flashed giving glimpses of riotous, windswept trees; and thunder crashed overhead. But storms go as suddenly as they come. Back came the sun, the air steamed with vaporation and the foliage glistened in fleeting vapor.

This demonstration of nature's way of spraying, was convincing. We gardeners are too gentle in using the hose. A strong force of water cleans both sides of the leaves, toughens the foliage and dislodges the pests; water being destructive to some pests and dislodgement fatal to others. The rain also had

put refreshing vigor into the vegetation. Thus does a shower-bath serve to maintain health in plants as in humans. Vegetation in order to offset transpiration from intense heat must have abundance of water. For instance, a pound of sugar in the table sugar bowl, requires 10 feet of annual rainfall or two tons of water, in the growing of the cane.

Along the highway the side walls of the jungle are like a fast growing hedge that requires constant trimming to keep it back. The trees grow in mixture and not in colonies of the same species; likewise the undergrowth.

We passed groups of native huts scattered along the roadside. The thatched roofs were picturesque, with each hut lined up facing the highway and the backs crowded up against a defiant jungle. And, yes, we met elephants trudging along the highway in their slow, ponderous, and swaying stride. Some were dragging logs by chains and others carrying sheaves of branches within their coiled trunks. The mahout sat supinely aloft just as pictured in my old geography book. Thus a boy's flight of fancy became a reality.

About noontime, we saw a herd bathing in a lazy river; elephants refuse to work during midday. Their life span is 150 years and they are considered the most intelligent of animals. We builders of high blood-pressure might ponder.

At the Botanic Gardens we saw growing the many interesting spices and plants which were the lure of collectors of past ages. Their quest led to bold venture in sailing unknown seas. In that search the choice flora

of the world was brought out from its hiding and botany, horticulture—and finally our gardens—made rapid gains in consequence.

In our country we have conservatories to conserve heat. There, lath-houses, substituting for forest shade, to keep out the heat. Perhaps we neglect to keep the walks in our lath houses and glass houses sufficiently wetted down. Moist air is a large part of the necessary growing conditions for most plants.

In lath shelters at the Gardens were collections of strange ferns, Begonias, orchids and oddities. Orchids have disappeared from the accessible wilds and are seen only in public parks, private grounds, and public markets. While we envy tropical gardeners, they envy us, for we have much beauty that is denied to them. A bed of cannas at the Gardens was lush and beautiful; an adjoining bed of Ophelia roses presented a sickly struggle for growth and flower. Yet about San Francisco Bay both are vigorous and handsome bloomers growing side by side. We think of the tropics as evergreen, but vegetation there has its resting period — even lawns. Many of the trees are deciduous including some of the most beautiful flowering ones; some shrubs and plants also lose their leaves.

Botanic gardens in most tropical countries are large and well designed public parks with expanses of lawn, generally native grass. Plants are labeled with both the botanical and the common name which is exceptional in American parks. With us, side amusement is generally provided by tree squirrels; in the tropics it is dwarf monkeys.

At Peradeniya the avenue of Royal Palms is a majestic sight. Some of the palm species are either too delicate or

unwieldy for cultivation in our conservatories. A forest of bamboo grew along the opposite bank of a stream bordering the gardens. The bamboos were grouped according to species in an impressive effect, — some of great height and others large in diameter. The bamboo and the coconut are among the most graceful plants of the tropics.

To see spices growing gave us a new conception of familiar names, alluring because of their historic associations. For instance, pepper led to the establishment of the Indian Empire by the British. The Dutch controlled the East Indian pepper trade in the Elizabethan period and, using a now familiar idea, had caused a scarcity by destroying plants outside of their own holdings. This angered London merchants and resulted in the formation of an English trading company. Black pepper is the dried berry of a climbing shrub whereas white pepper is the outer skin removed from the ripened fruit.

The cinnamon is an attractive evergreen tree with clustered flowers. It was known to King Solomon and Queen of Sheba when their fabulous wealth was being drawn from the resources of Ceylon. The tree is cut off at the ground level and suckers or sprouts produce a tender bark which is dried.

Vanilla is a native of Central America, yet its cultivation is largely in the East Indies. The flavor is extracted from two climbing orchids belonging to the genus *Vanilla* which is the only genus of orchids of known economic value. Seeds are borne in long pods each of which furnishes a few drops of oil of exquisite aromatic odor. Nutmeg develops within a husk, like the walnut, with a hard shell. Mace is the scarlet coating around the shell which contains the nutmeg or seed. The fruit

is properly a drupe and edible. The handsome clove tree belongs to the Myrtle family and the process of drying the unopened flower is a heritage from ancient times.

It was like meeting old friends to come upon two of our own common exotics. One was *Ricinus communis*, the Castor Oil Plant, which has gone wild with us but generally grows as an annual and attains a height of some fifteen feet, the immense leaves giving a tropical effect. In the tropics it becomes a pleasing tree of about 35 feet.

The other friend is our beautiful street tree, *Cinnamomum camphora*, (*Camphora officinarum*). It is shapely when young but ultimately the limbs shoot out at ungainly angles. It is processed by cutting the branches into fragments and boiling them in water. The camphor rises and becomes a wax upon the cooling water. At Hongkong we saw the camphor tree made prostrate by severe pruning. It made an attractive ground cover on the mountain sides. Most ground covers become somber during a portion of the year whereas this is a cheerful evergreen.

The native attendant at the Peradeniya Gardens, a botanist, spoke English fluently and contributed to a profitable and enjoyable understanding of the many beautiful and unusual plants.

One soon discerns in traveling about that every type of country and climate seems to have some form of native plant life not seen elsewhere. Although such plants may have a broad range of adaptability, yet we attempt to collect for a Noah's Ark and wistfully think that by gathering one of each kind, all may be made to live under one roof, even though we know that each has its own particular need and manner of growth. The *Ophelia* rose and the canna were not companionable at Pera-

deniya, yet the two are close associates in the San Francisco Bay area. Evidently they find a common denominator to their requirements here.

It is a mistaken conclusion that plants growing in the higher altitudes of the tropics will grow equally well in a similar climate of the Temperate Zone. Tropic altitudes have a more uniform climate. Likewise the length of day and night are more uniform, — being equal at the Equator. The daylight is intense. The variable is rain. Such factors are dominant for some plants and necessary for their well being.

Vegetation in the Himalaya Mountains reaches to elevations of 17,500 feet. Barley is cultivated at 15,000 feet; apricots and apples at 12,000. The snow line apex is highest in the tropics and from there the apex gradually lowers until the snow line and sea meet as the poles are approached. It is said that for about every 300 feet of elevation there becomes a reduction of one degree in temperature; and for every 270 feet in elevation the effect on the temperature is equivalent to receding one degree from the Equator. This comparison brings us to the same factor which also exists in the higher latitudes where intensity of light is likewise dominant but with another class of plants. These are the alpine which not only require such light but also need long vigorous winters, followed by a short rapid growing period with a prolonged daylight and a constant supply of ice-cold water. In the more northern latitudes, garden flowers, even at sea level, excel those in most of our states for brilliancy of color. We have seen tuberous Begonias at Skagway that were superb in crisp vividness. Most of us gardeners, in foregoing much of this, can compromise

on daffodils which are true alpine and do well in many sections.

Gardeners soon learn that plant growth is subject to many variables. Some factors may be vital to a plant, and those factors may be apparent, . . . such as heat. For instance, the two great valleys of California have tropical heat in summer but the air is dry. Certain crops do exceedingly well. But in the tropics the high percentage of moisture is what produces the lush growth. Yet our weather reports consider temperatures only whereas humidity is a large factor in many instances.

Then, other factors may be equally

important but not in evidence, such as soil content. Again, the factor may be indefinite. Thus in our own garden a plant may be saved or improved in growth by arbitrarily transplanting it to a different situation. The successful growing of many exotics which have been collected from remote parts of the world, is actually a story of plant compromises, and the possibility of such compromises is what adds interest and zest to our gardening.

(Material borrowed from an article by the Author, in Journal of the California Horticultural Society, July 1943, and used through the courtesy and permission of its publishers. Ed.)

Saving The Deodar Cedar From Root-Rot Fungus

GEORGE R. JOHNSTONE

The ornamental tree, *Cedrus deodara* Loud., native of the Himalayas, usually grows well in southern California. Its spreading branches, somewhat descending, bearing broad-elliptical, erect, female cones, justify a prominent place in the landscape. Arthur B. Seymour, in his *Host Index Of The Funji Of North America*, lists two fungous diseases; one is caused by the root-rot fungus, *Armillaria mellea* (Vahl.) ex Fr., while the other is a stem-, or timber-rot, caused by *Trametes pini* (Brot.) ex Fr.

A beautiful tree of this species, shown in the accompanying illustration, on the Kerckhoff Estate, now a part of the campus of the University

of Southern California, was infected by the root-rot fungus about 20 years ago. The future welfare of the tree was then doubtful. However, Andrew Morrison applied the tree-surgeon's technique by digging down to the infected base of the stem and to the infected roots, removing the diseased tissues, sterilizing with mercuric chloride (HgCl_2), and then coating the exposed xylem and the cut edge of the bark with asphalt emulsion. The fungus was eradicated. There is now no evidence of further decay, as the close-up illustration indicates. Some of the soil which had been removed was replaced with soil mixed with Bordeaux mixture as an added precaution against further spread of



George R. Johnstone

The wound area, inarching, and well at the base of the Deodar Cedar

the disease. A retaining wall seven feet deep was built approximately $3\frac{1}{2}$ feet from the center of the base of the tree to provide a well two feet deep which increases aeration for the root system. This well was thought also to be necessary because the ground had been filled-in above the original level at the time the tree was planted.

The nutrient absorbing power of the roots on the west side of the tree had been completely destroyed. In an attempt to compensate for this lack of absorption, Andrew Morrison and the Smither Tree Company planted three small trees of this species between three and four feet from the center of the base of the diseased tree and opposite the wound. The tops of these three trees were inarched into the trunk of the injured tree at points from 5 to 12 feet above the ground level. However, since then these small trees have not grown very much, presumably because of the shade. The maximum dimensions in inches of these inarched trees are given below, identified in clockwise direction around the base of the tree.

Tree "A" died during 1951 and has been removed. The top of tree "B" is

Tree	Base diameter	Top diameter near graft	Total length
A	2	$1\frac{1}{4}$	59
B	$3\frac{1}{2}$	2	144
C	4	2	68

bridge grafted and "B" is developed better than "A" or "C." It appears that inarching has contributed some water and mineral salts to the west side of the injured tree above the wound, however, the margins of the wound have healed unevenly.

The maximum overlapping of new growth over the old xylem on the right is 12 inches, while on the left it is 10, and $2\frac{3}{4}$ at the top of the wound.

The above treatment does not provide for full recovery of the tree, but it is believed that it prolongs the life of the Deodar Cedar. Two steel braces approximately 30 feet long support the tree on the west and south sides and have prevented it from blowing over.



George R. Johnstone

The Deodar Cedar, previously infected by the root-rot fungus, is now 92 feet high and 4 feet in diameter at its base.

Concerning Gloxinias

ELVIN McDONALD

For true beauty on your windowsills, try growing the lovely new *Gloxinia* hybrids. To my mind there is no other houseplant quite so lovely. They are easy to grow, and few other plants will reward you so freely as will the *Gloxinia*, year after year.

The colors range from white through the lightest pink through the darkest red and from lavender to deep purple. There are flowers that are ruffled and frilled; white spotted and dotted with color and bordered with white. Some of them appear to have had a mist of paint touch them. The size of the new hybrids is usually about four inches in diameter, but some of them are more than five inches. Truly outstanding.

Gloxinias may be started from mature tubers, young potted plants or seeds. They may also be propagated by leaf cuttings. Large tubers planted in November will produce specimen plants for the following spring.

Gloxinias like a fibrous soil, rich in organic matter, that is, compost, manure or leaf mold. A good potting soil can be composed of one-third parts each of leafmold or peat moss, sand, and good garden loam. If you have a good soil that grows African Violets, it is generally safe to use for Gloxinias since many of their requirements are the same and they are in the same family of plants, GESNERIACEAE.

Be sure and put good drainage in the bottom of the pots. About an inch of charcoal seems to be the best agent. Tubers under 1½ inches should go into five inch pots, larger ones into six and seven inch pots. Gloxinias like a temperature of 62° at night and a rise of 10 to 15 degrees during the daytime. If the temperature is excessively high

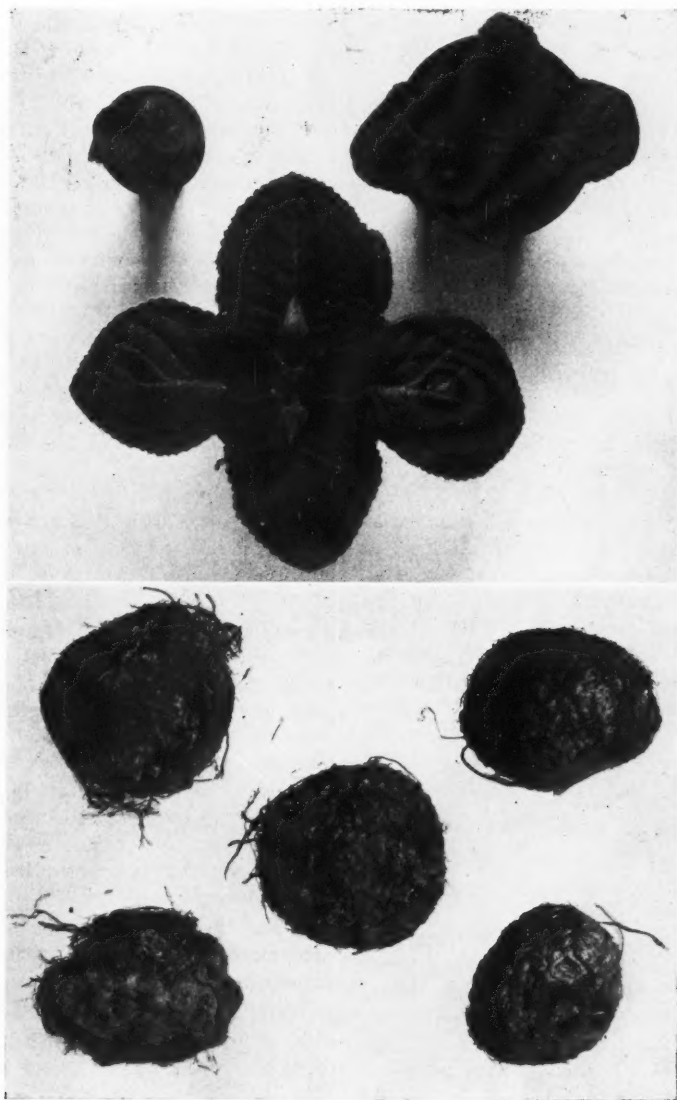
it will shorten the blooming period. Although contrary to the advice of some growers, I find it best to water them from the surface of the soil. I water the plant until the water runs out the bottom of the pot. Then I do not water again until the surface of the soil shows signs of dryness. In this way the soil will never become waterlogged, a condition which is usually the cause of bud blast.

In the house, Gloxinias like a southern or eastern exposure with just as much sun as they can get during the winter. They will require some shade in the summer, especially if grown in a greenhouse.

After they have been blooming during the spring and summer, Gloxinias should be given a short rest or dormant period about September or October. At this time, repot the tubers and set in a cool spot in the basement or in a cool, dark closet. Keep them only slightly moist during their rest which may last a week or it may last more than a month, according to varieties. If one shows signs of growth after a week's rest, start watering it once more and bring to good light. To stop this growth would only weaken the tuber.

Growing Gloxinias from seed is not difficult and will produce some wonderful plants, especially if you buy seeds from the Buell collection of hybrids. The seeds should be just as fresh as you can get. I recommend planting either in July or February. I plant during both months so as to have a different batch of seedlings coming along to bloom at different times.

The seeds are very fine and should be sprinkled thinly on a mixture of light loam, sand, and peat moss. Do not



Robert L. Taylor

*Top, Gloxinia plants growing in: 4-, 5-, and 6-inch pots.
Bottom, Gloxinia roots as purchased.*

cover them. Set the pot in a container of water and allow the soil to take up all the water it will. Then allow it to drain and put a pane of glass over the pot to conserve moisture. Set it in a warm, shady place. The seeds will germinate in from ten days to three weeks. Bring them to good light and let them have some early morning sun while they are small. I transplant them just as soon as the first true leaves are about $\frac{3}{8}$ inch across at the widest point. Prepare flats or large pots with rich, mellow soil, and prick the seedlings out, setting them about $1\frac{1}{2}$ inches apart each way. In about four to six weeks they will be crowding each other and will be ready to be put into individual pots. Transplant them into $2\frac{1}{2}$ inch pots of the same soil mixture as you use for the older plants. In six to eight weeks they will be ready for their final shift into five inch pots. Although this may sound bad it make such a move, I find it to be entirely satisfactory. It saves much time in repotting and a fast growing *Gloxinia* seedling will use so much water that it would dry out a three or four inch pot very quickly.

After flowering in this five inch pot when they are from seven to ten months old, they are dried off and treated the same as any mature *Gloxinia* tuber.

They are easy to grow from leaf cuttings. However, a blooming plant cannot be secured any faster than if you started with seeds. If you have a particular plant that you want more plants exactly like it, you will have to propagate it with leaves. Seeds usually do

not come "true." Cut the leaf stem just as close to the plant stem as is possible. This growth is harder than the rest and will root quicker. A good rooting medium is one-half parts each of coarse sand and peat moss. Put it into a terrarium or fish bowl and moisten slightly. Set the leaf stems in this to a depth of about an inch. Then cover the top of the container until the leaves become established. If the rooting medium is allowed to dry out, it will cause the leaf to mature prematurely and the tuber will not be as large as it would have ordinarily been. Leaves started in the spring and summer will produce tubers two to three inches in diameter by fall. When the parent leaf begins to yellow, it is time to dig the new tuber that has formed and pot it just the same as you would any tuber.

The common enemies of *Gloxinias* are thrips and bud blast. A good DDT spray will stop the thrips, but a preventative measure is always best. I have found that if good humidity is supplied, they are not very likely to be attacked by thrips.

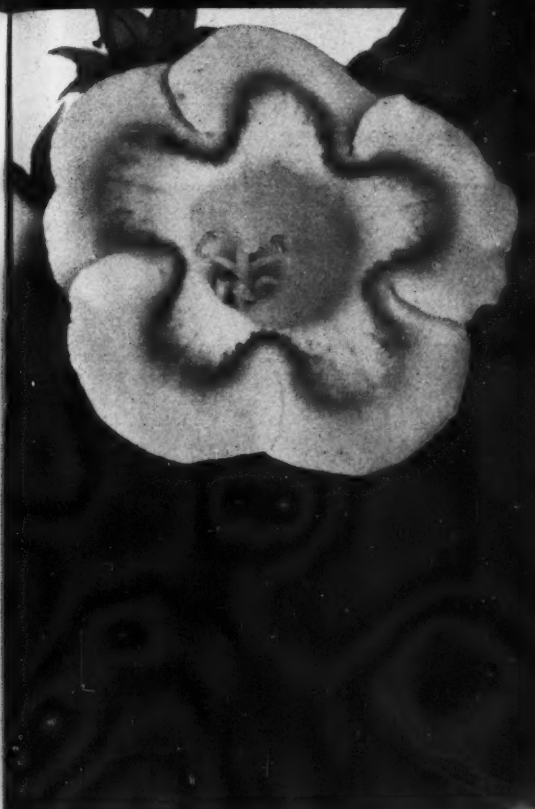
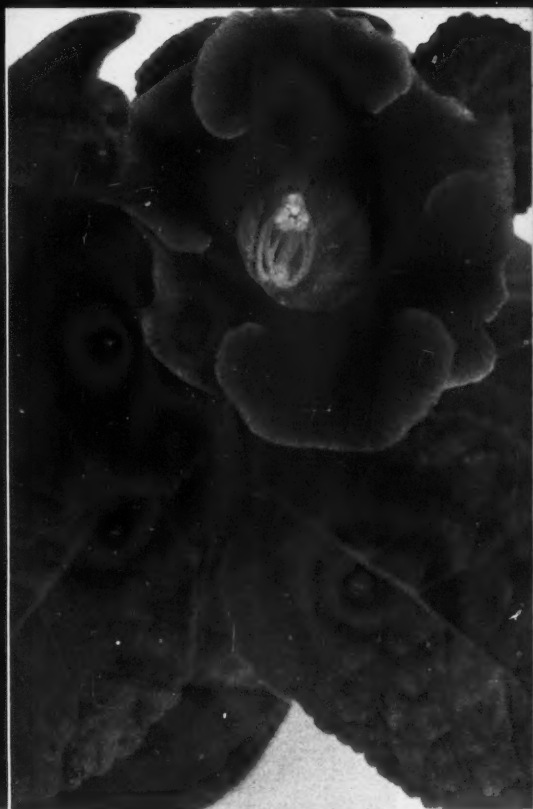
Bud blast is usually caused by overwatering at the critical bud stage. Just enough water to keep the soil nicely moist is the right amount. Never let the soil become soggy.

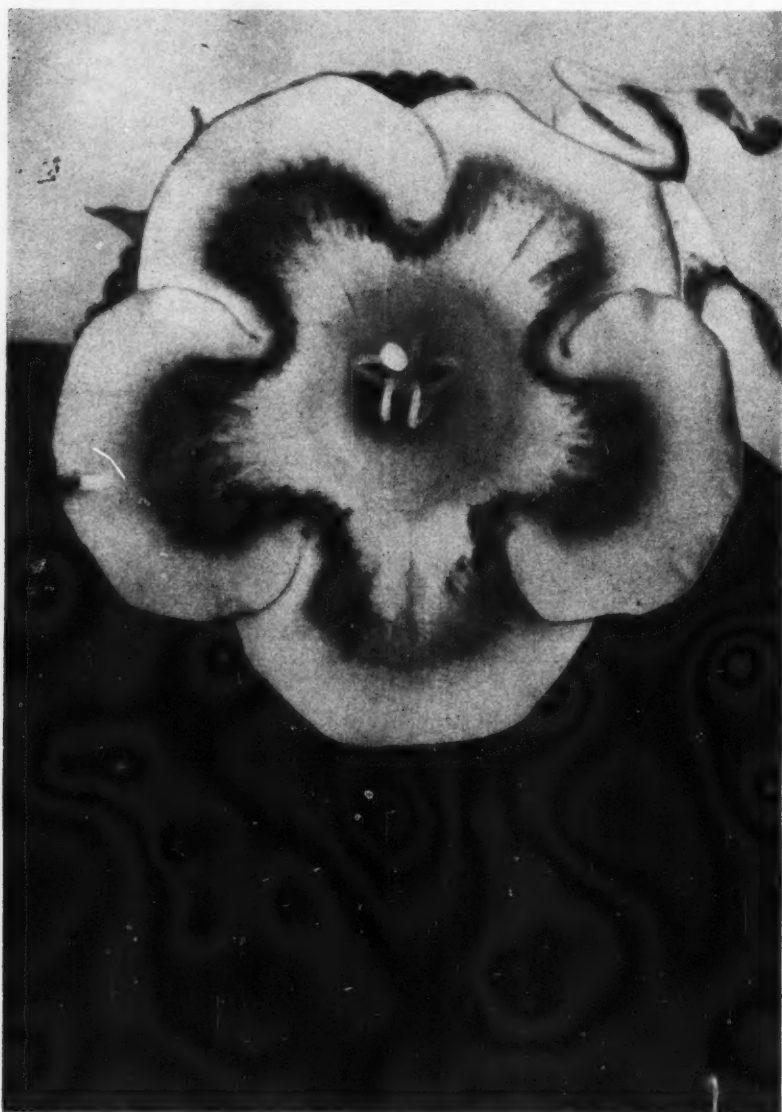
Plants that are leggy and spindly need more sunlight. I find that some varieties need more than others.

Water splashed on the leaves of a plant setting in bright sunshine will cause holes to be burned on the leaves. If you should happen to drop some wa-

All photographs by Robert L. Taylor →

All flowers shown on Pages 225 and 226 are seedlings chosen for the diversity of color and pattern.





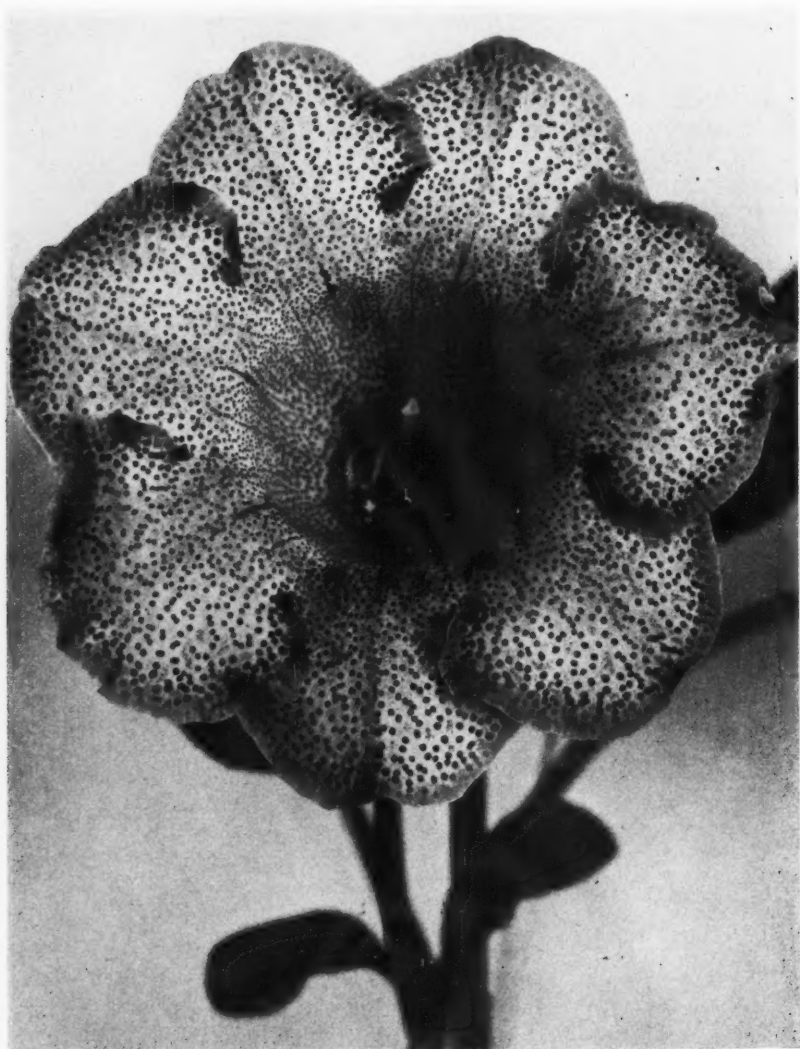
Robert L. Taylor

A white ground, set off by a shaded zone of pale lavender or pale rose.



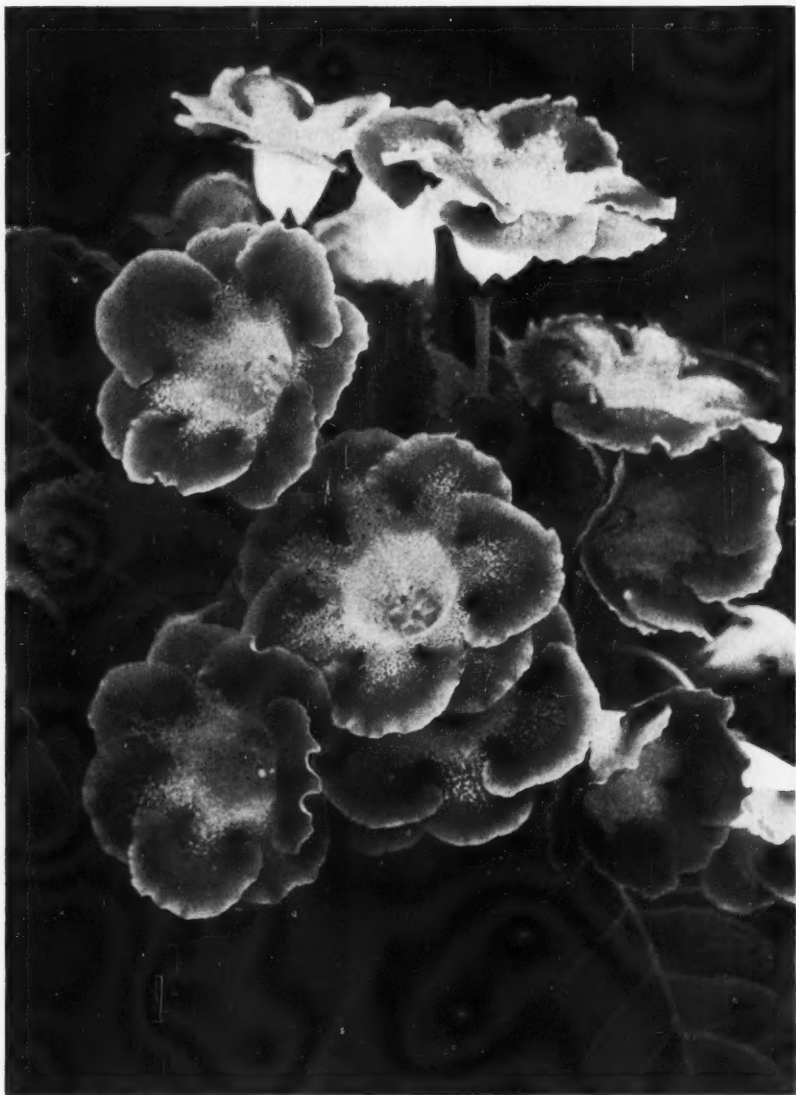
The Barnes Importers

Buell Hybrid Gloxinia



Robert L. Taylor

The type of Gloxinia usually known as Tigrina.



Philip G. Corliss

Buell Hybrid, Mildred Louise

ter on the leaves, move the plant to the shade until the water has dried off.

If the soil mixture you start out with is sufficiently rich you will not need to fertilize. However, it is always good to use some good liquid, commercial, fertilizer, once or twice during the growing season, and especially after the buds are forming. It will make for larger blooms and more of them.

The Buell hybrids are the best known of the new hybrids. There are more than fifty colors and color combinations in them and the flowers are very large. They were originated by Albert H. Buell and introduced by the Barnes, Importers.

The Merkle hybrids are the outcome of many years of careful hybridizing and selection on the part of Mrs. Hom-

er Merkle of Minnesota. She is selling her own hybrid seeds. The main highlight of these hybrids is the flowers that are speckled and spotted.

There are other hybrids but I will not mention them in this article.

The Slipper varieties with their slender foxglove-like blooms are the kind that bloom over the longest period of time. Even though the individual blossoms are not as large as the other type, they are usually produced in more abundance. I have one plant that has been blooming continuously for more than three months.

No matter how you choose to start your *Gloxinia* collection you are in for a real thrill in plant growing and something that will bring you many hours of enjoyment.

A Book Or Two

Modern Gardening. Dr. P. P. Pirone. Simon and Schuster, New York, 1952. 371 pages, \$3.50.

The second or sub-title of this book is much more revealing than the title itself: A Complete Guide to the Agricultural Uses of Modern Chemistry's Miracle Drugs. But even this does not cover all of the data that have been assembled for the reader.

The last decade has seen any number of research projects coming to happy conclusions as the result of scientific attention to problems relating to the health of plants of all types, not only those problems directly focused on the cure of disease or the fending off of insect attack but those that really can best be described as related to the maintenance of plants in health so that they will give optimum performance.

This is the same sort of goal that concerns the human being, the sum total of knowledge that will make a man a person living within the full scope of his powers, enjoying life as he lives it and producing for his fellows the best that he is capable of knowing and being and doing.

The book is written in delightfully simple style so that no one need be alarmed at the prospect of a barrage of technical terms foreign to his experience. There are admirable tables and through the text many wise suggestions not only for following the outlined procedures but words of caution to prevent happy imagination, possibly inflamed by the vocabulary of commercial advertising, from expecting more than is reasonable. There is no intimation that we have come to an end, but rather

that we have only begun to expand our understanding.

In the latter portion of the book, there is a section of questions and answers based on Dr. Pirone's years of experience, leading questions in most cases, but from the gardener's level so that he will be further encouraged in his progress into the new field.

Understanding Heredity. An Introduction to Genetics. Richard B. Goldschmidt. John Wiley and Sons, Inc., New York, 1952. 288 pages, illustrated with diagrams. \$3.75.

For this reviewer this is one of the most delightful scientific books that has ever come to his desk, written for the non-scientist or the student who is thinking of beginning. Dr. Goldschmidt makes his position very clear and is at pains to remind the reader, from time to time, that the whole story is not being told in that chapter but only what is pertinent to the building up of understanding in a person approaching the material for the first time. Again, there are reminders that whole sections needed for a complete and advanced treatment are deliberately omitted. Nowhere, however, does the reader feel that he is being treated as a special case himself.

There is inevitably a special vocabulary, pertaining to the science. This is made clear as one goes along; but there is also a Glossary at the end of the book, as well as a list of advanced books for the student who wishes to go on from this reading.

Dr. Goldschmidt is a zoologist but there are treatments of plants among the many illustrations, from the earliest Mendelian cases to the more modern treatments of corn. For our own read-

ers it will not be a book that will give them an immediate clue to what may be puzzling them should they be raising plants and using the cross pollination methods of getting ahead, but if it is read and reread until its admirably clear presentation has become a part of their own patterns of thought, only good can result. If you are not raising plants in this fashion, read it anyway; it is absorbing and stimulating.

Jarb. Miriam Powell. The Thomas Y. Crowell Company, New York, 1952. 241 pages, illustrated. \$2.50.

This is a juvenile and like many another juvenile is written with one eye on the adults as well. It is in dialect, southern of course, perhaps Georgian, this reviewer would not know. It has to do with life in the rural areas where pines are the major "tree crop" and where the practice of burning over the land has taken its toll of life from the soil as well as the trees. It has to do also with what goes on in such communities in the way of turpentine and the newer practices that are leading up to proper forest management. For myself, I am not so sure, but it is many a year since the reviewer was the proper age for reading texts like this.

Botanical Books. Prints and Drawings from the Collection of Mrs. Roy Arthur Hunt. Catalogue of an Exhibition show at the Carnegie Institute, Pittsburgh, 1952. Foreword by Elizabeth Morgan, Curator of Prints, National Gallery of Art, Washington, D. C. 80 pages, illustrated. \$1.00. Orders should be sent to the Carnegie Institute, Fine Arts Department, Forbes Street, Pittsburgh 13, Pa.

Mrs. Hunt has been a book collector

and horticulturist for many years. She is President of the Hroswitha Club, a group of the outstanding women book collectors in this country, and her book-bindings have been exhibited in many institutions. She is editor of Garden Literature in the *Bulletin of the Garden Club of America* and has been a director of that organization, from which she has just received a Medal of Achievement.

If one is learned in this field he will have a greater appreciation of what Mrs. Hunt has done than will the untutored, but even the latter will find a particular delight in looking through the book with its informing foreword, its running comments and the delightful reproductions. If he is garden minded, he will be pleased with the changes in nomenclature that have been going on for so many years, and that are not a modern custom for his particular and private annoyance. Should he have no other access to such illustrations, they alone would be enough to induce a purchase and if he is concerned with drawing himself, he might well study the techniques and the page compositions.

Trees for American Gardens. Donald Wyman. The Macmillan Company, Inc., New York, N. Y., 1951. 376 pages, illustrated. \$7.50.

Once more Dr. Wyman has pulled off the nearly impossible bringing together a great mass of information within a definite pattern of his own devising. As in the former book, on shrubs and vines the faults and virtues lie chiefly within the plan itself. Any one who attempts to write a book short of an encyclopedia on plant materials for the whole United States must suffer the inevitable compressions of publication and in this case Dr. Wyman has

elected the equally difficult and compressing results of personal judgments of excellence.

There are certain definitions omitted that would have helped greatly. In the title there is the significant word gardens, but in the text less than 50% of the stress lies there. In the chapter on hardiness there is an excellent discussion but two vital elements are not considered, one the duration (extent in days) of heat and unbroken cold on survival, and the other the incidence of cloudy or foggy weather through periods of low temperatures.

As always there are, as there should be, differences of opinion. Many of the author's data are faulty because he has not "lived" in the areas for which his title required his attention. Some of his data suffer from his personal enthusiasms and some from his lack of the same. The Acacias, for example are poorly done. *Albizzia* with its new root disease needs no more than an obituary. Araucarias are badly chosen and the explanation of the common name "Monkey Puzzle" seems quite new. Camellias rarely become trees within any reasonable time period and do not often show tree-like habits, some cited will never be such, e.g., Lady Clare.

Almost no regular attention was paid to late leafing out and the whole group of *Carya* get no such mention, nor Juglans. This is an important feature in gardens particularly in the South. *Cunninghamia* rarely makes a decent tree and certainly should not be in the first list. Italian and Monterey Cypress will hardly enjoy Zone 7. Eucalypts should be diversified, with some attention to the fact that for the Southeast a different group of species is essential. The same is true for Acacias as the species used in California for better or worse come from a wet-season-dry-season cli-

mate and do not like Florida. There are other species from Malaya in one case, from Africa in the other that will serve if one wants them. *Acacia decurrens dealbata*, does not grow in the "deep South."

The discussion of *Magnolia soulangeana* on page 218 needs some clarification for if "the popular hybrid originated as a chance seedling" (note the singular) would it not be well to explain how there are now "many clons"?

As an American with no personal garden interest in New England, the reviewer finds too many *Crataegus*, too many crab apples, too many willows and poplars, too many northern conifers and too little attention to material for all other areas.

One must smile at the "timely" inclusion of the dawn sequoia which cannot have proved itself after so brief a life in these United States.

The Gardeners Pocketbook

Lumite Shade Cloth Aids Orchid Growth

Experiments conducted by Dr. Wesley Davidson, professor of ornamental horticulture at Rutgers University, New Brunswick, N. J., shows that the use of Lumite shade cloth has contributed to a 300% increase in the number of fertilized orchids grown during his tests.

Dr. Davidson has been experimenting for the past two years with a combination of factors controlling light, heat, humidity and fertilizer in orchid growing. For orchids are a 3½ million dollar business in New Jersey, ranking with many of that state's agricultural crops.

As part of the experiment in light control, Lumite shade cloth was placed on the roof of the college greenhouse two years ago in place of a lath shade made of hard-grained cypress. This Lumite cloth measures approximately 25' long by 33' wide. The cloth is rolled on an aluminum pipe, 1½ inches in diameter, which is mounted on an aluminum frame.

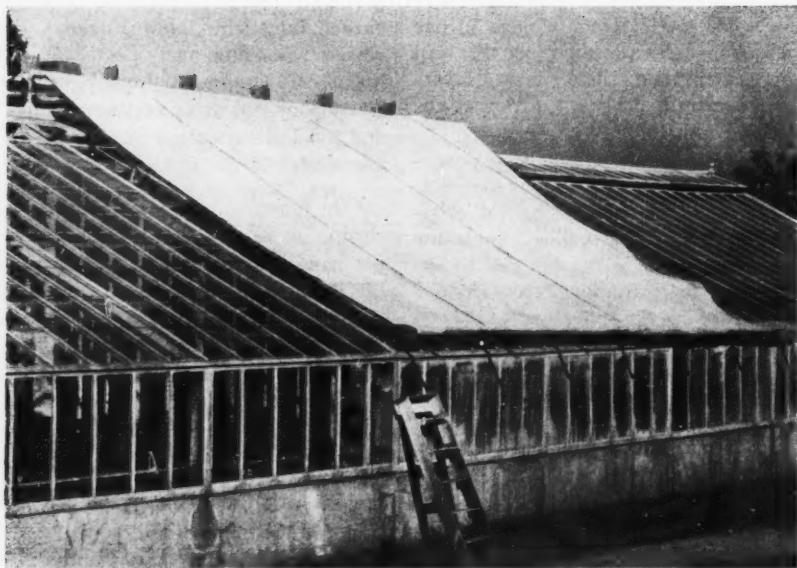
"My experiments show that fertilized orchids can use more light than unfertilized, and this Lumite shade cloth permits the plants to get the necessary light without burning.

"Started from small plants, these orchids grew quicker, with better texture, stronger stems, and therefore lasted longer. Some orchids can now be flowered in 3½ to 4 years, instead of 5 to 7 years, because of combined light and nutrient."

This cloth can be rolled up and down to control the light during the day. When rolled down, the mesh eliminates approximately 55% of the light intensity.

As this cloth is semi-permanent, with a known life span of twelve years, it requires no annual maintenance.

Lumite shade cloth retails for approximately twenty-four cents per square foot and is available either from the Lumite Division of Chicopee Manufacturing Corporation, or from Lager & Hurrell, Summit, N. J., commercial orchid growers and distributors.



Edward Trayford

Exterior view of Lumite Shade cloth on greenhouse at Rutgers University.

A Handful of Daffodils

Now that the Narcissus has become a specialist's flower and more and more lists appear in which are offered the newer introductions of several breeders, it is easy to lose one's way in making choices among so many beauties. The varieties that are illustrated here are not chosen with the idea that they should be first choices in this year's ordering but rather as indications of some older sorts that are not met too often and some newer things that in one garden, at least, have not come up to their promised descriptions.

Starting first with an old-timer we have the charming jonquil hybrid, Cherie. The illustration, upper right, which is life size like the others

shows that it is not a large flower, just true jonquil size, but does not indicate that the flower stems are on the short side, not short enough to make the flowers look dwarfed, but short. The perianth is ivory white and the irregularly flaring cup is definitely flushed with pale shell pink over the ivory ground. There is very little change in tint as the flower ages so that the pinkness does not disappear. The jonquil scent has been altered but not lost.

Trousseau, which has headed the Royal Horticultural Society's list as best exhibition bicolor for many years, is a lovely pale bicolor, as one can see from the illustration, upper left, but in the Takoma Park garden, it has never given the color development



of the trumpet that is indicated, just as such much older varieties as Rosary and Suda have rarely given the full and ultimate flush of pinkiness. The description of the pale trumpet reads "opens soft yellow and passes gradually to a most lovely buff rosy cream . . ."; buff, yes, but with me, never a hint of rosy cream. Perhaps it still longs for the softer, moister airs of Britain.

Zero, lower left which has all the garden effect of a white trumpet, but which is now classed as Division II(c), is all one might expect: strong, tall stemmed, with flowers that hold their heads well, show a lively stance in the carriage and arrangement of the segments, and a delightful clear white color that suggests ice rather than cream, and is further accented with the pure dark green that shows a little at the very base of the trumpet-like corona. The flowers photographed were taken directly from the garden to the studio and had not the advantage of one night in a warm house with water to fill up the tissues and smooth out some of the creases that still show in the perianth. It has been vigorous in growth and has increased well in the garden.

Rouge is an informal flower that in my garden has rarely given me a flower that would come up to the ultimate in requirements for the show table, but the coloring is so distinct and so unusual, not forgetting so dependable that it is often put in show where it causes great talk. The illustration shows all that need be for size, form and carriage. The color is the thing.

The perianth is a soft yellow over which is laid a thin wash of pinkish buff. There is no question about this; anyone can see it and set again some of the white perianths of some of the other sorts, it is startling. The cup is almost brick-red and fades very little in our spring sunlight. The flowers photographed were old, as can easily be seen by looking at the anthers already free of pollen but they show little change in substance and last well whether left on the plant in the garden, or taken into a cool room in the house.

Ace of Diamonds, Frontispiece our last picture is an old Poet that has more or less dropped from sight. It is not one of the largest flowers, nor is it absolutely ideal in form. It suffers also from too long a pedicel for the exhibition form. The cup is almost sealing wax red but like all its fellows of that style, fades somewhat in our strong sunlight. The telling point for me, and this is a purely personal opinion, is that it is perfect for cutting. The stems are very long, almost to two feet in time, and I happen to like to gather small flowered narcissus that have long stems and put them in a sheaflike mass that will throw their faces into a starry mass that for me, suggests the Milky Way. It takes a little doing perhaps, a wire or two to hold the bases of the stems in order, but all that is hidden under water. Some of the old, old "Leedsii" varieties are even better, with their pure white flowers, but Ace of Diamonds will warm the heart and eye when so set up.

B. Y. MORRISON

Takoma Park, Md.

